UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,176	01/29/2001	James A. Proctor JR.	TAN-2-1508.01.US	1093

24374 7590 12/06/2010

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER	
BURD, KEVIN MICHAEL	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
12/06/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eoffice@volpe-koenig.com

Office Action Summary	Application No.	Applicant(s)	
	09/772,176	PROCTOR, JAMES A.	
	Examiner	Art Unit	
	Kevin M. Burd	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-14,16,17,19,21,22,25-36,39 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-14,16,17,19,21,22,25-36,39 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

1. This office action, in response to the request for continued examination (RCE) and amendment filed 9/23/2010, is a non-final office action.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/23/2010 has been entered.

Response to Arguments

3. New rejections of the claims under 35 USC 101 and 35 USC 112, second paragraph are stated below.

4. Applicant's arguments filed 5/4/2010 have been fully considered but they are not persuasive. Applicant states Kong discloses the mobile station is already at a specific location and is not moving toward or away from a specific location. Applicant states Kong discloses the distance between the base station and the mobile station are at a fixed distance for communication. For this to be accurate, the mobile station would have to stop being mobile and begin communication with a base station. When that communication ends, the mobile station will resume its movement until a time when

communication is desirable again. At this time, the mobile station will stop moving and begin communicating. The examiner disagrees with this interpretation of the reference. Kong discloses a CDMA communication system utilizing mobile and base stations. A base station is typically situated in the center of an area (or cell) where the base station is able to communicate with mobile stations which enter this region (cell). When a mobile enters this region (cell), the mobile begins communicating with the base station. The channel conditions will vary as the mobile travels through the cell (as the distance between the mobile and base station increases or decreases). The mobile will continue traveling through the cell and will eventually be located at the outer service area of the cell, where the service quality will deteriorate. At this point, the mobile will search for a new base station, located in the cell adjacent to the previous cell with better service quality. During this time, the base will compensate for the deteriorating quality by increasing transmission power or performing pertinent compensation. When a new base station is acquired, handshaking will occur and the communication between the mobile station and the first base station will cease. The mobile station will be mobile (moving) during this communication and will not be stationary as stated by applicant.

Applicant states Bucher does not disclose an amplitude of a wireless signal as a whole. Applicant states Bucher teaches only a comparison of an amplitude of an I component of a signal with an amplitude of a Q component of the same signal. The examiner disagrees. Bucher discloses determining the error between the I and Q components of the received signal as compared to an ideal or expected amplitude. This is shown in figure 4. Points 44 and 46 are different points than the ideal or expected

value indicated by an X in figure 4. The difference or error is represented by an I component 45 (or 50) and a Q component 52 (or 54). This is also described in column 4, line 60 to column 5, line 4. This section describes the magnitude error identifier generating a value representing the I component of the difference between the actual phase relationship and the theoretical ideal relationship and likewise for the Q component. Therefore, the "whole" of the signal, both the I and Q component of the signal sampled at that moment, is used. Figure 4 shows the corresponding circuitry for determining both of the I and Q components in blocks 40 and 42.

Applicant states Bucher does not teach or suggest the use of a phase determined relative to a reference signal separate from the wireless signal. The ideal phase relationship between the I and Q components of the signal are represented in a constellation diagram such as figure 4 as stated by applicant. When noise, error or other inaccuracies are invariable introduced into the actual signals, the detected phase at the receiver typically does not match the theoretical ideal relationship (column 4, lines 47-55). This is the example shown in figure 4. The phase relationship of the received points 44 and 46 relative to the ideal point X is shown and the difference between the actual and the ideal is the phase error. The theoretical ideal is a calculation and not a portion of the received signal.

Applicant states Bucher's definition of phase thus depends on a comparison of components within the signal. This is not correct. As stated above, Bucher determines the phase error according to the relationship between the received I and Q component

and the theoretical ideal I and Q component as shown in figure 4 and described in column 4.

For these reasons and the reasons stated in the previous office action, the rejections of the claims are maintained.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 42 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 42 recites a computer-readable storage medium containing a set of instructions for a general purpose computer. 1351 OG 212 states:

> Subject Matter Eligibility of Computer Readable Media
>
> The United States Patent and Trademark Office (USPTO) is obliged to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO. See In re Zletz, 893 F.2d 319 (Fed. Cir. 1989) (during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow). The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. See MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal per se, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. See In re Nuijten, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101, Aug. 24, 2009; p. 2.
>
> The USPTO recognizes that applicants may have claims directed to computer readable media that cover signals per se, which the USPTO must reject under 35 U.S.C. § 101 as covering both non-statutory subject matter

and statutory subject matter. In an effort to assist the patent community in overcoming a rejection or potential rejection under 35 U.S.C. § 101 in this situation, the USPTO suggests the following approach. A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. § 101 by adding the limitation "non-transitory" to the claim. Cf. Animals - Patentability, 1077 Off. Gaz. Pat. Office 24 (April 21, 1987) (suggesting that applicants add the limitation "non-human" to a claim covering a multi-cellular organism to avoid a rejection under 35 U.S.C. § 101). Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals per se. The limited situations in which such an amendment could raise issues of new matter occur, for example, when the specification does not support a non-transitory embodiment because a signal per se is the only viable embodiment such that the amended claim is impermissibly broadened beyond the supporting disclosure. See, e.g., Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473 (Fed. Cir. 1998).

DAVID J. KAPPOS
Under Secretary of Commerce for
Intellectual Property and
Director of the United States Patent
and Trademark Office

For these reasons, claim 42 is rejected as reciting non-statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 5-14, 16, 17, 19, 21, 22, 25-36, 39 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 2, 5-14, 16, 17, 19, 21, 22, 25-36, 39 and 42, the claims recite at least one of amplitude of the wireless signal as a whole or phase of the wireless signal as a whole. This amendment is vague as to what the phrase "as a

whole" is supposed to mean. The instant application does not disclose using the entire modulated signal to measure the amplitude or phase. The instant will use samples or a portion of the signal to determine the amplitude or phase of the received wireless signal at that time. This is similar to the prior art where Bucher discloses determining a value responsive to error magnitudes occurring over several symbols (column 4, lines 22-23). The specification as originally filed is silent as to the definition of "amplitude of the wireless signal as a whole" or "phase of the wireless signal as a whole." Clarification and correction is required. If the entire signal is used to determine the amplitude and phase value, applicant must point to the portion of the originally filed specification that supports this new limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 11-14, 16, 17, 19, 21, 22, 31-36, 39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,700,881) in view of Bucher (US 5,621,737).

Regarding claims 1, 2 and 19, Kong discloses a CDMA communication system. The receiver detects when the distance between the base station and the mobile station increases (column 2, lines 9-13). A reduction of the SNR and a corresponding increase

in the BER detects this amount of motion of the communication device (column 2, lines 3-25). When the distance between the base station and the mobile station increases, the transmission device will compensate by increasing the transmission power or performing a pertinent compensation (column 2, lines 14-19). Lowering of the FEC or coding rate would be a pertinent compensation (column 3, lines 3-26). Kong does not explicitly disclose how the BER or SNR is determined. Therefore, Kong does not disclose a measurement of a metric of the modulated signal attribute comprising at least one of amplitude, phase and frequency. Bucher discloses a BER estimation circuit 36, which determines a value responsive to error magnitudes occurring over several symbols (column 4, lines 22-23). It will be appreciated that errors may be phase errors, magnitude errors or a combination of both (column 4, lines 31-34). Therefore, the BER measurement determines the phase and/or magnitude errors of the received signal. Bucher discloses determining the error between the I and Q components of the received signal as compared to an ideal or expected amplitude. This is shown in figure 4. Points 44 and 46 are different points than the ideal or expected value indicated by an X in figure 4. The difference or error is represented by an I component 45 (or 50) and a Q component 52 (or 54). This is also described in column 4, line 60 to column 5, line 4. This section describes the magnitude error identifier generating a value representing the I component of the difference between the actual phase relationship and the theoretical ideal relationship and likewise for the Q component. Therefore, the “whole” of the signal, both the I and Q component of the signal sampled at that moment, is used. Figure 4 shows the corresponding circuitry for determining both of the I and Q components in

blocks 40 and 42. The theoretical ideal is a calculation and not a portion of the received signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to provide this simple substitution of the BER estimator of Bucher for the BER estimator of Kong. These components will operate in substantially the same manner and will yield the same results.

Regarding claims 11-13, the combination of Kong and Bucher discloses the method stated above. MPEP 2111.04 discloses claim scope is not limited by steps that suggests or makes optional but does not require steps to be performed. Calculating the metric based on a frequency error signal as recited in these dependent claims are optional limitations since different modulated signal attributes are met by the reference.

Regarding claim 14, Kong discloses changes to the BER and SNR are determined and power increases and changes to the FEC or coding rate take place when necessary.

Regarding claims 16 and 17, the combination of Kong and Bucher discloses the method stated above. MPEP 2111.04 discloses claim scope is not limited by steps that suggests or makes optional but does not require steps to be performed. Selecting the parameter adjustment of an antenna mode as recited in these dependent claims are optional limitations since different parameter adjustments are met by the reference.

Regarding claims 21, 22, 39 and 42, Kong discloses a CDMA communication system. The receiver detects when the distance between the base station and the mobile station increases (column 2, lines 9-13). A reduction of the SNR and a corresponding increase in the BER detects this amount of motion of the communication

device (column 2, lines 3-25). When the distance between the base station and the mobile station increases, the transmission device will compensate by performing a pertinent compensation (column 2, lines 14-19). Lowering of the FEC or coding rate would be the pertinent compensation (column 3, lines 3-26). Kong does not explicitly disclose how the BER or SNR is determined. Therefore, Kong does not disclose a measurement of a metric of the modulated signal attribute comprising at least one of amplitude, phase and frequency. Bucher discloses a BER estimation circuit 36, which determines a value responsive to error magnitudes occurring over several symbols (column 4, lines 22-23). It will be appreciated that errors may be phase errors, magnitude errors or a combination of both (column 4, lines 31-34). Therefore, the BER measurement determines the phase and/or magnitude errors of the received signal. Bucher discloses determining the error between the I and Q components of the received signal as compared to an ideal or expected amplitude. This is shown in figure 4. Points 44 and 46 are different points than the ideal or expected value indicated by an X in figure 4. The difference or error is represented by an I component 45 (or 50) and a Q component 52 (or 54). This is also described in column 4, line 60 to column 5, line 4. This section describes the magnitude error identifier generating a value representing the I component of the difference between the actual phase relationship and the theoretical ideal relationship and likewise for the Q component. Therefore, the “whole” of the signal, both the I and Q component of the signal sampled at that moment, is used. Figure 4 shows the corresponding circuitry for determining both of the I and Q components in blocks 40 and 42. The theoretical ideal is a calculation and not a portion of the received

signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to provide this simple substitution of the BER estimator of Bucher for the BER estimator of Kong. These components will operate in substantially the same manner and will yield the same results.

Regarding claims 31-33, the combination of Kong and Bucher discloses the method stated above. MPEP 2111.04 discloses claim scope is not limited by steps that suggests or makes optional but does not require steps to be performed. Calculating the metric based on a frequency error signal as recited in these dependent claims are optional limitations since different modulated signal attributes are met by the reference.

Regarding claim 34, Kong discloses changes to the BER and SNR are determined and power increases and changes to the FEC or coding rate take place when necessary.

Regarding claims 35 and 36, the combination of Kong and Bucher discloses the method stated above. MPEP 2111.04 discloses claim scope is not limited by steps that suggests or makes optional but does not require steps to be performed. Selecting the parameter adjustment of an antenna mode as recited in these dependent claims are optional limitations since different parameter adjustments are met by the reference.

8. Claims 5-7 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,700,881) in view of Bucher (US 5,621,737) further in view of Watanabe (US 2001/0041584).

Regarding claims 5-7 and 25-27, the combination of Kong and Bucher discloses the method and apparatus discloses above. The combination does not disclose an automatic gain control loop is found in the receiver. Watanabe discloses a CDMA receiver that includes the AGC amplifier 37A in figure 1. The AGC amplifier is provided for amplifying the received signal to a desired signal level, in which its gain may automatically be controlled to optimum so that its received power may become as minimal as necessary depending on the distance from the base station (paragraph 0066). Therefore, the receiver will increase the received signal level as the distance between the receiver and the base station increases so the signal can be received and processed correctly. This variable gain control will further minimize errors in the received signal. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the AGC amplifier of Watanabe into the receiver and method of the combination of Kong and Bucher.

9. Claims 8-10 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al (US 6,700,881) in view of Bucher (US 5,621,737) further in view of Ryu (US 6,430,244).

Regarding claims 8-10 and 28-30, the combination of Kong and Bucher discloses the method and apparatus discloses above. The combination does not disclose the phase errors are produced by a delay locked loop. Ryu discloses a digital phase locked loop. The PLL will lock the received signal with a delayed version of a feedback signal by altering the feedback signal's phase as shown in figure 3. The PLL circuit includes a

phase comparator for detecting phase errors of the input signal and a feedback signal (abstract). The PLL is a typical method of detecting phase errors from a received signal and an expected signal. The PLL is a well known, simple and cost effective method of determining and correcting phase errors in a received signal. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the method of determining the phase errors of Ryu into the method and receiver of the combination of Kong and Bucher.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
11/29/2010